June-July 1973

EMO

Southwestern Ontario Floods — 1973
The Great Lakes
Emergencies and EMOs
Amateur Radio Service in Emergencies
Communications in Natural Disasters
Emergency Communications Centre
Beating Disaster to the Punch
The Role of the Armed Forces in C.D.

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SOUTHWESTERN ONTARIO FLOODS – 1973

Preliminary Observations

by

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Introduction

Lake shore erosion and flood threats from some of the lakes in southern Canada in the late winter of 1973 led two EMO Fellowship holders to conduct a field study of the situation. This paper is a preliminary and partial report of one phase of that study. It deals with the coordination of the response effort (especially the involvement of EMO) to the problem, and examines the degree of saliency and legitimacy attributed to the local EMO by other emergency relevant organizations in its geographical jurisdiction. The observations in this report are based on preliminary impressions and are subject to later modification based on a more systematic examination of the information collected.

The Nature of the Problem

Lake St. Clair and Lake Erie early this year were already filled to capacity. In normal weather they pose no threat. However a strong wind "piles" the water on the shore line and causes flooding of the low-lying areas. This is precisely what happened on Friday, March 16, 1973; 40 knot winds from the northeast and northwest pushed water over the southern shores of Lake St. Clair. As a result flooding of a low-lying area occurred along about 90 miles of shore line.

Three other factors also seem to have contributed to the problem. First, this flooding began after 10:30 p.m. on Friday after a somewhat unanticipated increase in the strength of the wind. Thus warning time was relatively short and darkness compounded problems. The second problem was one of psychological perception. Although the residents had been prepared to face flooding, most people only anticipated a few inches of water. Also, while most of the people had knowledge of the power of water, few were prepared for or had anticipated the erosion possibilities or structural damage to their property due to the pounding action of the waves. The third problem was that water backed up drainage ditches and rivers and flowed inland, flooding areas which had not been anticipated. Since the CNR tracks run along the lake front, the land behind the tracks was perceived as "safe," and perhaps would have been if the rivers and drainage ditches had been contained.

Field Work

Field work was conducted from Monday, March 19 through Wednesday, March 21, 1973. The threatened area was all within one county which had a joint Emergency Measures Organization with the largest municipality in the county (Windsor).

The research strategy adopted was to explore in depth the nature of the emergency response of this large city and to interview one public official in the three smaller communities. The reasons for this were: (1) The larger city (hereafter referred to as the "mother city") had at its disposal the necessary equipment and manpower to be of service to the smaller communities which were close by. (2) The smaller communities were tied into various city-centered emergency organizations (e.g., EMO, fire department) so that a thorough study of the mother city should uncover any mutual aid agreements. (3) The smaller communities were of such small size (5,000 population or less) that one central official should be able to speak knowledgeably about his community's activity. In this phase of the field study, about ten community officials were interviewed.

Observations

Response Coordination

In attempting to summarize the response pattern, it seems useful to make a distinction between individual property owners and community organizational (e.g., governmental) responses.

Individual Property Owners

The threat of flooding had been recognized for months prior to its onset in this region. As a result some of the residents along the lakefront had purchased sand bags from the community government (at 20¢ per empty bag and 25¢ per full bag).

There was no collective sand bagging operation along the lakefront and the following factors seem significant. (1) Not all of the residences were primary residences, many were cottages and the owners did not use them year round. (2) Many of those who had primary dwellings were away on vacation and therefore not present. (3) Most people did not anticipate the size of the problem and underresponded, especially along the rivers and

drainage ditches. As a result sandbagging tended to be isolated and no collective action developed.

Since most residents did not anticipate the height and force of the water, most refused to evacuate their homes in the early stages. Only early Saturday morning did they begin to move out. School buildings were set up as evacuation sites and evacuees stopped off there for food and coffee and made calls to friends and relatives to pick them up.

Before entering the field we had anticipated collective action among residents and potentially a social movement for self-help and financial aid. It did not occur here. Some possible explanatory factors could be: (1) The absence of primary residence owners on vacation and absence of cottage owners inhibited collective action along the waterfront and (2) the fact that kin groups were readily available to take in relatives mitigated the possibility of evacuees collectively assembling in an evacuation center to recognize their common predicament or to organize effectively to deal with it.

As a result, as the waters receded people have returned to their properties and do not appear to be working collectively at this point. Perhaps an additional reason why no *esprit de corps* has yet emerged is the realization by the owners that anything less than some major breakwater construction or dyking would be almost useless.

Emergency Relevant Organizations

Using a community coordination interview schedule, an attempt was made to chart the response of the various organizations to the threat. In order to do this, a discussion of the relative impact is necessary. The Mother City had very little flooding (only along its east end). As a result, it was better able to assist the smaller neighboring communities. The community adjacent to the Mother City (population approximately 5,000) has most of its lakeshore jurisdiction flooded and an estimated 30 percent of the community was affected. The next community (population under 500) was about 70 percent affected as most of it was close to the lake with no inland depth. The third community studied (population approximately 2,500) had about 10 percent of its population affected.

The response in each of the small communities was similar. Other than supplying sand and selling sand bags, little was done to prepare the community for the flooding. Since they are small communities with little or no industrial base, they had small revenues acquired through land taxes and could not afford to make large expenditures. A complicating factor was that a sewer system was in the process of being constructed and taxes had already risen sharply. As the areas flooded, schools were opened as shelters, and buses and trucks were used to evacuate people along with small boats. As indicated earlier, few people stayed in these shelters and instead relocated with relatives. As the waters went out people returned to their homes and the community government continued to offer sand bags and attempted to pump back water with pumps sent in to them as EMO could locate them.

In the mother city the situation was generally the same. However attempts were made to sandbag low lying areas by the Public Works Department with varying success. Those who evacuated went to a school opened for them and also relocated themselves. As the water receded the Department of Public Works cleaned up the affected area and rebuilt sandbag operations to prepare for the next flood threat.

Police Department. In the flooding situation, the police generally tried to handle traffic problems and gave little emphasis to looting or sealing off the area since the water made affected areas quite impassable. Generally their activity was not much different from usual. Like most police departments, they have plans developed to expand the operation of the organization to full capacity. Thus this aspect of planning was well developed.

Fire Department. The fire department had no flood-related calls nor any real involvement in the disaster response. They are prepared, as are most fire departments, to lend assistance to any community in the county. Mutual aid agreements were made with all fire halls in the county and all alarms are sent through the mother city fire department. Thus, not only are there mutual aid pacts, but all fire calls for the county are dispatched through the Mother City Fire Department. Thus the dispatcher can initiate the mutual aid pacts as soon as the size of the fire is determined. Thus this area of disaster response is also very developed.

Public Works Department. This department was very active throughout the emergency, maintaining all of its normal services, plus being very active in sand bagging operations. It did experience some difficulties in calling in its manpower and as a result, steps are being made in future planning to ensure that it can call in manpower quickly to respond to disaster. Thus while not very well prepared for this past flood situation, steps have been taken to improve disaster plans for the future.

Mayor's Office. The office of the mayor of the Mother City was very active in acquiring and processing financial aid for the damage of the November, 1972 flooding. It was active in soliciting Provincial Aid as a result of the last flooding and took initiative in drawing together the mayors of other affected municipalities in the county to plan collective action to solicit Provincial relief monies. Thus this office was very active in working on financial issues.

City Manager's Office. While the city manager is responsible for running the city, he has delegated authority to various department heads. Unless major decisions were necessary, the city manager's office was not involved in the response to the flood. Plans are made for an Emergency Operating Center in the event of a major disaster so conceivably the city managers office would become more prominent. However, since this plan has never been implemented (due to the disaster free environment) it probably would have difficulty in going into operation quickly.

EMO Saliency and Legitimacy

The local office of EMO is directly under the City Manager's control and officially the local director, in a large disaster, would work with other officials in an Emergency Operating Center. These officials would include Fire Chief, Police Chief, Commissioner of Public Works, City Manager, and Director of Social Services.

The policy of the local EMO is determined by the Emergency Measures Committee which is manned by the Mayor of the Mother City, three aldermen of the city and three Reeves of the county. The director of the local EMO is hired to implement such policy.

The local EMO is very well organized with plans developed and constantly updated with all communities and townships in the county. Bi-annual meetings are held with all emergency relevant organizations in the Mother City which maintains its visibility and keeps planning current. Communications equipment is maintained to ensure contact with all communities in the county and EMO.

During the current flooding EMO was used by other organizations as a resource pool and they made requests for supplies, equipment, and information. EMO, through its volunteers, worked to fill the requests. It fulfilled what it referred to as its "coordination function" quite effectively.

EMO was visible, legitimate, and seen as a useful and a viable facet of disaster preparedness with all officials interviewed. It was perceived as a capable and valuable part of the community's preparedness, and favorable comment was made about its personnel.

EMO had the responsibility for warning and received good cooperation from the mass media to keep the people informed. They also coordinated the acquisition of buses and boats for evacuation purposes. The local Provincial Police Office has an updated list of available community resources and where they could be located. EMO was in contact for relevant information. EMO also arranged for schools to be opened as evacuation centers and contacted Red Cross and the Salvation Army to handle feeding and clothing operations. Although EMO had stockpiled some equipment, their budget was too small to have much on hand. However to mitigate this shortage, they relied on the list of supplies compiled by the Provincial Police.

In light of some other research findings about local civilian defense offices in the U.S.A., this Canadian example is an atypical case. Generally a small EMO in a relatively disaster-free environment would not be as visible nor as legitimate. While it must be admitted that such a small organization with a small budget and limited equipment would not be able to handle nor coordinate a larger disaster, they handled this flooding response quite well. It seems reasonable to describe this area as a relatively disaster-free environment, since the only real threats are tornadoes and flooding. When asked to rank probabilities of disaster, the only other threat mentioned as highly probable was a freezing ice storm.

Besides the fact that EMO is very active in disaster planning and hence visible there are other possible factors which have contributed to its legitimacy and saliency. First, historically speaking, cooperation and mutual aid seems to be almost a tradition among the communities in the county. The cooperative spirit among the various communities was very much in evidence during the recent flood response. It is almost regional government in the sense that all communities feel a responsibility to anyone in the county. Thus EMO is operating in a very conducive environment. Secondly, since EMO is so closely tied to the City Manager's office, it is more directly related to all other Departments in the city and through the City Manager's office, EMO is made more visible to other emergency relevant organizations.

Lately, EMO's attempts at disaster planning has been legally based. The attempt to keep planning current has been by trying to pass by-laws which make such disaster planning mandatory and gives it a little more legitimacy. This has been justified via subsection 2 of Section 4 of the Emergency Measures Act, R. S. O., 197, Chapter 145.

Conclusion

EMO was legitimate and due to its smooth and efficient running of the March 1973 flood response, its legitimacy and centrality in disaster coordination has increased and been stabilized for the near future. The director of EMO stated that a few officials in some communities had been somewhat skeptical of the need for EMO in the past and had not been totally cooperative with his attempts to keep disaster planning current. However, since the November Flood, he said that his job has been made much easier. Thus while no disaster sub-culture is emerging in the communities, among emergency relevant organizations and municipal government a closer, more visible and elaborated emergency response capacity has been developed. Thus while resources are not available to mitiate flooding, planning is of such a nature as to effectively bring to bear the resources which are available. ▲

THE GREAT LAKES

The following material has been excerpted from a booklet published by the Department of Environment "What you always wanted to know about Great Lakes levels". The aim of the publication is to answer often posed questions: What factors affect the rise and fall of lake levels?; Do high and low levels come in cycles? To what extent do water levels vary? What physical features affect the flow of water between lakes? What controls are possible? Are water levels forecasts a reality? What records are published? Is more information available?

Physical Features of the Great Lakes

The complexity of water level changes is better understood by first examining the physical features of the Great Lakes Basin and its connecting rivers and channels. The five-lake system with an area of almost 100,000 square miles of water surface and twice that area of land draining into it, extends some 2,000 miles from the western end of Lake Superior to the Gulf of St. Lawrence on the Atlantic Ocean. These lakes forming a series of immense water reservoirs are connected by rivers and channels in a stair-case fashion falling some 600 feet to sea level.

Lake Superior, the uppermost, is also the deepest of the Great Lakes. Its natural supply of water has been slightly augmented from the Albany River Basin, through the Long Lac and Ogoki diversions since 1939 and 1943 respectively. Its outflows, which have been completely controlled since 1921 by the International Lake Superior Board of Control under the supervision of the International Joint Commission, are channelled through some 70 miles of the St. Marys River to Lakes Huron and Michigan, 23 feet below Lake Superior. Most of this drop occurs at St. Marys Falls, where seaway navigation locks and power development structures provide Canada and the U.S. with deep-draft channels and electrical power as well as the ability to control the Lake Superior outflow. The regulating program provides for control of water levels on Lake Superior taking into account the effect it might have on the levels of lakes lower in the system.

Downstream are Lakes Huron and Michigan, which are essentially at the same level and are considered hydraulically as one, because of the wide and deep Straits of Mackinac connecting them. The natural outflow from these lakes, less a diversion of water at Chicago into the Mississippi River Basin, finds its way through the St. Clair River, shallow Lake St. Clair and the Detroit River for a total distance of 84 miles, to Lake Erie, only 8 feet below the level of Lakes Huron - Michigan. Dredging operations in the St. Clair and Detroit Rivers have lowered the level of Lakes Huron - Michigan.

Lake Erie is the shallowest and has the second smallest surface area in the group of five Great Lakes. Its main outflow is uncontrolled and flows through the Niagara River into Lake Ontario some 326 feet below the Lake Erie level. Most of this sheer drop is displayed in the unrivalled might and beauty of Niagara Falls. A structure in the river above the falls controls the distribution of flows between the two power-houses in each country and the flow over the falls for purposes of the 1950 Niagara River Treaty between Canada and the United States. This treaty assures that Lake Erie levels and outflows are not affected by diversions from the river for Canadian and United States power use, and that the wonder of the Falls is perpetuated. Lake Erie water also reaches Lake Ontario by way of diversions to the DeCew Falls power plant, the Welland and New York State Barge Canals.

With the completion in 1958 of the control structures in the St. Lawrence River for the seaway and power projects, the outflows from Lake Ontario have been regulated by the International St. Lawrence River Board of Control under the supervision of the International Joint Commission. Of the remaining 243-foot drop between Lake Ontario and the Gulf of St. Lawrence, 160 feet are developed for power at Cornwall and Beauharnois.

Hydrology of the Great Lakes

Fluctuations in mean lake levels result from an imbalance in the amounts of precipitation, evaporation, runoff, groundwater flow, and the inflows and outflows of a particular lake. Increases in evaporation and outflow lower the water level while increases in the other factors raise it. Precipitation, averaging 31 inches per year on the Great Lakes Basin, falls not only on the surface of the lake, where its contribution is directly reflected in increased lake levels, but also on the surrounding watershed. Roughly a third of the precipitation falling on this land area eventually reaches the lake as runoff through a myriad of rivers and streams. A major portion reaches the lake as groundwater, flowing slowly through underground passages and aquifers. Although

it is not easily measured, this contribution is estimated to be a very small portion of the total input. Evaporation both from the water and the land area, as well as transpiration from vegetation, return approximately two-thirds of the precipitation to the atmosphere.

The amount of inflow and outflow from one lake to the next, which ranges on the average from 73,000 cubic feet per second (cfs) in the St. Marys River to 232,000 (cfs) in the St. Lawrence River, is relatively constant. For example, a one-foot change in water level on Lakes Huron-Michigan alters the outflow in the St. Clair-Detroit Rivers by only about 7%. Even though the mean values of the hydrologic parameters differ from lake to lake it is mainly the variations in local basin conditions that alter the water level.

Time Lags in the System

Generally, the large surface areas of the lakes and relatively restricted outlets of the connecting rivers contribute to the very pronounced time lags in the system. For instance, if an additional 5,000 cubic feet or 31,145 gallons of water were poured into Lake Superior every second, it would take five and a half years to raise the level of that lake by one foot. The increased outflow caused by this higher level would first be absorbed by Lakes Huron and Michigan, where due to their vast surface area, 80% of the time loss occurs. It has been estimated that about three years elapse before 50% of any increase or decrease in outflow from Lake Superior would be noticed in Lake Ontario. Lakes Michigan-Huron absorb sudden changes in water supply, because of their vast surface area, providing a relatively steady supply to the smaller Lake Erie. Lake Ontario, having no such downstream reservoir, must have its discharges limited through the control works at Cornwall. Excessive discharge, while lowering the level in Lake Ontario, will cause flooding farther downstream, and too little will reduce the depth of water available for shipping in Montreal Harbour.

A Closer Look at Lake Erie

Although the processes on Lake Erie are fairly representative of the other lakes, they are not precisely similar. Differences in storage capacity, time of snowmelt, climate, geology, vegetation and channel depths of the individual basins, impose different seasonal and annual highs and lows as well as different times for their occurrence.

In the early spring, as a result of snowmelt, heavier rains and reduced evaporation over the basin, increased runoff and groundwater flow reach the lake causing the water level to begin its rise from the mid-winter low and the inflow to exceed the outflow. As summer approches, increased precipitation over the lake and still relatively low evaporation further raise the water levels to their mid-summer highs. In late summer, as the lake water becomes warmer, more persistent winds and drier air, intensity evaporation. Runoff and groundwater flow reach their lowest values. Thus, water levels begin their downward trend toward winter minimums when the inflows are less than the outflows.

This cycle is basically repeated from year to year with differing annual levels of precipitation, evaporation and runoff causing higher or lower seasonal levels. When either excessive or deficient water supplies continue for a prolonged period, corresponding extremes in the water levels result, which tend to persist after the supplies have returned to normal because of the small outlet capacities of the lakes. In 1950 unusually high precipitation and runoff initiated the climb in water levels that culminated in 1952 with all-time high levels. Conversely, in 1963, the very low precipitation and runoff combined with unusually high evaporation contributed to the extreme low levels experienced in 1964.

Lake Level Regulation

The problem of controlling or regulating water levels in the Great Lakes is not a simple one. Because of their immense storage capacity, the Great Lakes already provide one of the best naturally regulated water systems in the world. For instance, when the water level rises on a lake the outflow from this lake increases thereby preventing further rises in level. Lakes Superior and Ontario, at opposite ends of the system, now have their outflows artificially regulated. It has been estimated that as a direct result of this regulation, especially on Lake Ontario, the extreme water levels of recent times have been ameliorated by more than a foot over the natural levels; that is, high water levels have been reduced and low levels increased. Studies undertaken jointly by both governments of Canada and the United States under the International Joint Commission, are investigating the technical problems, costs and potential benefits associated with complete regulation of all the lakes.

Man's widely divergent uses of Great Lakes water produce rival claims which complicate their regulation. Consideration must be given to the effects on shore properties, navigation, power, recreation, domestic water supply, fish and wild life, and consumptive uses. Shore property owners desire relatively low lake levels, or at least a reduction in level fluctuation, in order to minimize the loss of land through increased shoreline erosion during periods of high water. However, in his desire to be close to the water, man has located dwellings in the

flood plain of the lake which are also damaged during high stages of the lake, intensified by storms. Exposure of the lake bottom, stranding of wharves and decaying plantlife are serious problems during low water periods. Navigation interests require higher lake levels to maintain minimum draught in harbours and channels during the shipping season. Hydro-electric power generation requires near constant flows to meet the demand of peak load periods in winter and to conserve water during low power consumption in summer. These illustrate just a few of the problems that are being investigated by the International Joint Commission.

YEAR 1952 —

"... The high levels to which the waters of the Great Lakes have risen in recent years are a matter of grave public concern ..."

YEAR 1965 —

"... The abnormally low water levels on the Great Lakes over the past two or three years have generated demands that something be done to control the levels of all the lakes ..."

YEAR 1972 —

"... Last month's tropical storm AGNES combined with unusually high water levels in Lake Ontario is causing record erosion in the Niagara Peninsula this year ..."

These excerpts from articles appearing in the press show that past levels have seldom been 'just right' throughout the whole system and probably have been 'too high' as frequently as they have been 'too low'. Although everyone is aware of recurring changes in water levels, considerable misunderstanding of the reasons for these fluctuations continues to exist.

Magnitudes of Water Level Variations

While the often quoted, "Seven-Year Cycle", or for that matter any clearly established long-term cycles or trends are not observed in the water level records of the Great Lakes, many other variations are seasonal, the water levels rise one or more feet, depending on the lake, from a low in mid-winter to a high in mid-summer. Variations from one year to the next are usually less than a foot, but several years of excessive precipitation or prolonged drought have caused, in the past, extremely high and low levels, exceeding average values by as much as three feet.

Short-term changes in levels also occur. Storms of a few hours duration, particularly on shallow Lake Erie, have forced water to pile up three to seven feet on a leeward shore. Seiches, similar to the sloshing oscillations set up in a bathtub upon entry, give rise to surface fluctuations in excess of a foot. The passage of a low or high-pressure weather system can result in a half-foot rise or fall in water level in response to changes in atmospheric pressure. Tidal variations also occur but these are no more than an inch or two at the most.

Water Level Measurements

To monitor these fluctuations, more than 35 water level gauges operated by Environment Canada, are permanently located at key points around the Canadian shoreline of the Great Lakes, their connecting channels and the St. Lawrence River. Since these are measurements at only specified locations, several gauges strategically placed around each lake are required to resolve such phenomena as seiches and wind set-up which have spatially varying water level effects. Some gauges record on continuous charts while others punch the data on paper tapes and still others store the data for automatic transmission when activated by a command from a central processing unit. The gauge records are recovered, checked and processed monthly. The analyzed data are used to up-date water level forecasts, and are included in numerous publications such as the "Monthly Water Level Bulletin — Great Lakes and Montreal Harbour" and the annual graph of "Monthly and Yearly Mean Water Levels".

Forecasts of Great Lakes Levels

The Monthly Water Levels Bulletin, published by Environment Canada now includes a six-month forecast of Great Lakes levels. These forecasts are presented as the probable levels above low-water or chart datum. Chart datum is a low-water datum which is so low that the water level will seldom fall below it.

The forecasting method involves reading the actual level at the end of each month and calculating its effect on the downstream level. By reference to levels records dating back to 1900, the range of levels likely to occur

(Continued on page 10) **THE GREAT**

EMERGENCIES AND EMOs

A survey of what the news media have been saying. Prepared for the Canada Emergencies Measures Organization

"The Emergency Measures Organization did its co-ordinating work well . . ."

So pronounced a well-known southwestern Ontario newspaper (Windsor Star) in an editorial post-mortem on the destructive floods that hit the Lake Erie and Lake St. Clair shorelines in mid-March.

In its own way, it was an eloquent tribute, since only four months earlier the same newspaper had rapped EMO's performance in the floods that wracked the same area last November.

The organization then had been "clearly caught by surprise, and unable to either co-ordinate individual efforts or to assist in an organized way."

The change of tune suggests that — assuming the editorial assessments to have been reasonably valid — EMO at least has the capacity to learn from its mistakes.

A University of Ohio State study group that in March 1973 examined EMO's role in the two flood situations found however that the organization performed well on both occasions. (See page 1)

"EMO was legitimate and due to its smooth and efficient running of the November 1972 flood response and the March 1973 flood response, its legitimacy and centrality in disaster co-ordination has increased and been stabilized for the near future," reported this study group.

Mixed praise and criticism aren't new to the organization whose task, as defined in the 1972-73 defence department estimates, is nothing less than "to enable the nation to survive and recover from war emergencies and peacetime disasters".

Nor is its way of winning over critics or living to see them neutralized.

"EMO Given Endorsement by Committee," ran a headline in another Ontario newspaper (The Sudbury Star) last Dec. 1. The story told of a unanimous vote of confidence being given the local EMO organization by regional council's health and social services committee.

Only a week previously, one of the councillors — who had been a member of the EMO executive — demanded that the organization be scrapped. Its proposed $11,000 budget was thereupon referred to the committee for further consideration.

In the sequel, EMO got its money as well as the confidence vote.

It wasn't the first time somebody had called for EMO's corporate head, either at the federal level or local level or both, and it probably won't be the last. It's an organization that doesn't get much attention as long as the community it serves is blessed with an absence of large-scale disagreeable happenings.

But when something in the nature of a calamity occurs, EMO is immediately in the limelight — and on the spot. The undoubted fact that it has enjoyed a high degree of general public acceptance, and even sometimes plaudits, indicates that it fills a recognized need.

This acceptance is particularly discernible at the community and regional level, where EMO is most visible and where it does most of its work in coping with emergencies.

If EMO didn't exist, something very like it would have to be invented, since disaster planning is becoming an increasingly vital imperative of public policy in Canada.

Two EMO officials who have been busy demonstrating the capacity of their organization to cope with emergencies are Robert Norwood, co-ordinator for Ontario's Essex County (where the Lakes Erie and St. Clair floods occurred), and Stephen Wotton, co-ordinator for Ontario County (parts of which were hit by flooding from Lake Ontario at about the same time.)*

"Since last November, our local organization has grown in stature," says Mr. Norwood." . . . It takes something like this (the floods) to make people realize there is a vehicle here that can do some good.

"If we never do another thing, I'm convinced that what we've done here in the past year has justified the need for an organization such as ours."

Mr. Norwood's use of the expression "the past year" referred to a whole succession of lake floods that occurred in his territory beginning in June of 1972. It was, he says, the worst period he has been through in his time either as co-ordinator since 1967 or, before that, as deputy co-ordinator from 1962 to 1967.

For a week during the March floods he and his planning officer, Bob Upcott, worked day and night in the fight against flood waters and, where necessary, overseeing the evacuation of citizens from inundated or threatened homes.

Articulating the basic function of EMO — not always understood by the public — Mr. Norwood says: "We are essentially an advisory and co-ordinating agency for all the townships of the county".

EMO relied "very heavily" on volunteer help in times of crisis. It was powerfully assisted in the recent flood situation by its good rapport with the news media, which enabled it to broadcast appeals for help for individuals requiring it.

On the other hand, there was a serious weakness in that printed information was not distributed to residents

*This article was prepared prior to the much more serious flooding of the Saint John River basin in May, 1973. A report of EMO response and direction in this New Brunswick emergency will be published in a future edition of the Digest.

of the shoreline as it should have been. "I'd like to see it get out to everybody on the lakes," said the co-ordinator, without attempting to assess blame for the fact this wasn't done in the recent emergency.

Over in Ontario County, east of Essex and on the other side of Toronto, the EMO co-ordinator was faced with a different kind of communications problem.

With only himself and his deputy, Joseph Reid, available for duty, Mr. Wotton found it impossible to keep someone at their office answering calls for assistance. As a result, they were forced to institute a tape-recording system which allowed flood victims to leave messages to be answered when one of them became free.

"If we could convert immediately to a 24-hour capability to answer calls it wouldn't be a bad idea," says Mr. Wotton.

Nevertheless, citizens appreciated being able to call the EMO co-ordinator and "tell him their troubles" — even on a delayed basis.

Like Mr. Norwood, the Ontario County co-ordinator feels that the emergency organization built up a "tremendous amount of goodwill" through its efforts in the recent flooding.

"I don't think there is anyone who hasn't a good word to say for EMO."

One of the big advantages EMO had was a clear-cut mandate from the Pickering Township Council to organize assistance to six individual communities whose ratepayers associations had approached the Township for help.

The council made EMO's burden easier to bear by providing $9,000 to cover expenditures on such things as sandbags and cement used for erecting defences against the flood waters.

The communities themselves provided most of the flood-control labor, with EMO augmenting the labor supply with volunteers where needed.

What kind of man does it take to develop the flexibility and provide the leadership necessary to co-ordinate activities in the most effective manner when an emergency strikes?

Well, take it from Burke Stannard of the Defence Research Board, scientific adviser to Canada EMO: the post of EMO co-ordinator shouldn't be regarded as a turkey roost.

"Don't fill it with some turkey like 'Old George' just because it isn't generating problems every day," he told a conference of mayors and elected officials at Canadian Emergency Measures College, Arnprior, Ont., recently.

"The man that you choose to do your planning for emergencies may be the most important official appointment in your life. Take your best man — one who has ideas and also a broad knowledge of urban problems."

The chances are 1 in 3 or 4 that a two-term mayor will have to declare a state of emergency some time during his tenure of office, Mr. Stannard said.

In recent years, to cite a few examples of what he was talking about, EMO organizations have been called on to deal with forest fire hazards to population centres in the Northwest Territories; with potential hazards from chemical spills on the West Coast; flooding in interior British Columbia; a windstorm in northern Ontario; floods in Manitoba, Saskatchewan and Alberta; ice jams in Nova Scotia, a mudslide at St. Jean Vianney, Que., and floods in the Great Lakes system.

EMO branches are engaged in such specialized activities as helping maintain a Tsunami — seismic tidal wave — warning system for coastal British Columbia, and a rescue service for persons standed in the woods or mountains of interior B.C.

All this is a far cry from the kind of thing that EMO, or at least its antecedents, were created for.

In the beginning it was the ARP, founded in World War Two to prepare the population against the possibility of German or Japanese air raids.

Wartime blackout blinds had long been put away when disaster planning experienced a revival, this time under the name of Civil Defence, and in the context of the cold war with its apprehended danger of a Soviet bomber attack.

The growth of Russia's thermonuclear power, and the advent of the missile age, lent new urgency to preparations against a possible surprise attack. The government responded by creating the Emergency Measures Organization, with headquarters in Ottawa and sub-units in each provincial capital. Provincial and municipal organizations willingly followed the federal lead.

The public was encouraged to build basement fallout shelters, and thousands of families did.

International tensions reached a peak with the Berlin and Cuban crises of the early 1960s, and then began to subside. Simultaneously the danger of a devastating nuclear war began to recede.

In the improved climate of the last decade, EMO has modified its former near-exclusive concern with war preparedness, though contingency planning for an attack on North America still is part of its assignment.

(One of its biggest projects in recent years has been a nation-wide shelter survey aimed at identifying buildings where Canadians could take cover in the event of a nuclear attack.)

The emphasis now is on civil disaster planning. There's plenty of scope for this. As Mr. Stannard told the mayors in an address two years ago: "You can be sure that things aren't going to get any easier."

"Today's urban populations are much more vulnerable than were the populations of a few generations ago."

"Great grand-dad could sit out the ice storm in this cozy cabin but his grand-children have a few more problems. Take away the electric power and the communications from a modern city and in a matter of hours you have an emergency with probable loss of life . . ."

"As urban life becomes more and more complex and as we become more numerous and more squeezed together we will be hurt more easily."

EMO National Co-ordinator C. R. Patterson had identified modern transportation as one area which in itself offers practically unbounded potential for disaster.

(Continued on page 10) **EMERGENCIES**

AMATEUR RADIO SERVICE IN EMERGENCIES

by
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Emergency Preparedness Division, Security Services Branch
Dept. of Supply and Services, Ottawa

The reserve of communications equipment and the related technical and operating expertise available in the Amateur Radio Service and been utilized in a number of provincial emergency communications plans and from the viewpoint of the emergency planner, it has been proven that if use of amateur radio is contemplated it must be properly integrated into disaster response plans right from the start.

In Saskatchewan emergency plans depend a lot on the Amateur Service for communications backup. In Saskatoon, the fastest response to recent emergencies has been through amateur service and some organized owners of general radio service (GRS) equipment. That city's extensive use of amateur radio and amateur equipment forms a vital part of an emergency communication system including the hospital emergency plan. Amateurs and equipment and amateur VHF frequencies are regularly exercised and actually used in emergencies under the auspices of an amateur radio club sponsored by EMO.

British Columbia's Civil Defence has about 160 amateur stations which as a co-ordinated system utilizes, as required, public utility, broadcast, private and commercial stations. Six different amateur nets are used, one for each EMO Zone, each with links to the central provincial network.

In Alberta, the EMO system employs four amateur networks, all closely integrated with the EMO co-ordinators whom they serve. Instructions to co-ordinators and amateurs are contained in a concise guide which details such things as relations between the users and the amateurs, regulations for the handling of official EMO traffic, and reimbursement for amateur participants for out-of-pocket expenses directly incurred as a result of assisting EMO personnel. The four networks involve 47 stations in 36 cities, towns and villages and are exercised each Sunday.

The utilization of the present systems of VHF and UHF amateur repeaters, some of which are equipped with the latest hardware and technological improvements, indicates a need for some official protection or assignment of an amateur frequency for emergency work. The role of the amateur service in emergencies.

**ABOUT THE AUTHOR*

Doug Burrill was a wartime Royal Canadian Corps Signals Officer, and as an active radio amateur (VE3CDC) is a director of the Canadian Amateur Radio Federation Inc. and Chairman of its Liaison Committee with the federal Department of Communications. He has been employed in emergency planning for ten years and is currently with the Security Services Branch of the Department of Supply and Services.

The role of the amateur service in emergencies is now officially recognized with the Canadian Amateur Radio Federation as the liaison agency between the Department of Communications and Canadian amateurs.

Assistance to authorities in time of emergency is a tradition of the amateur service in all countries and is a prominent feature of Canadian amateur activities. Many Canadian amateurs handled emergency traffic to and from the recent Managuan earthquake but encountered problems in finding someone to accept the official traffic directed to the federal government. There is a need for the designation of a government contact point for amateur operators which would be operational 24 hours, 365 days of the year to which official traffic could be directed.

The Amateur as a Communications Engineer

A different angle of amateur radio participation in a county and city emergency plan appears in Frontenac/Kingston EMO plans where the Kingston Amateur Radio Club, with a wealth of engineering and technical expertise available undertook the complete design and installation of the extensive Kingston/Frontenac County EMO VHF communications systems.

Having completed this extensive radio system and set up a communications centre in the Kingston County Court House the Kingston club proceeded to train and supply amateur operators for the emergency nets on EMO and amateur frequencies. Realizing that during business hours many amateur operators may not always be easily available, a back-up plan utilizing local taxi companies was incorporated into the EMO plan for Kingston City. By a strange quirk of fate, an exercise based on a scenario featuring an explosion and fire in a local hospital actually happened some months later and at that time the back-up plan paid off because the quick response of the taxi communications system was able to provide a service immediately. This event underlined the fact that all communication resources in a community should be integrated into any plan involving amateur organizations.

Many "Amateurs" are "Professionals"

Modern techniques as applied, and in some cases developed by amateurs fully justify the use of the word "experimental" in regard to this hobby. The number of highly qualified professional people in the electronic and physics sciences who carry their expertise into their hobby is especially large in a research centre like Ottawa.

The use and employment of FM on VHF and UHF frequencies by amateurs in their repeater systems could

provide a reliable, flexible back-up system for EMO nets. A number of repeater stations now operate on 12 volts DC float-charged batteries and have a built-in capability for emergency use in situations of hydro power failure. Their use extends the range of low-powered mobile sets with reliable, noise-free phone communication.

Amateurs are presently running and communicating with their own orbiting satellite, Oscar 6. One of the four telemetry and control stations is located in Ottawa. This resulted from an emergency at the ground control site in the United States and in the speedy action by an Ottawa amateur supported by interested Canadian companies. The Ottawa control facility was built up in two days and has since been improved to the extent that the control station, located in the basement of a local amateur's home is fully automated. While amateur satellites are an extremely interesting development both for the professionals and the "button-pushers" in the amateur fraternity, their official employment in emergency work will not be feasible until a stationary satellite is made available.

It is emphasized to planners that the ability of modern solid state VHF transceivers used as base, portable or mobile stations independent of power mains offers a ready source of emergency communications systems for civil emergencies. ▲

THE GREAT *(Continued from page 6)*

can be determined, provided that average weather conditions prevail.

The published forecasts show a 50% probability line. This line indicates future lake levels *if average water input* occurs between the time the forecast is issued and the month for which it is valid. From time to time, however, there are periods of excessively wet or dry weather. Therefore, the graphs also show for each lake the levels that will occur if large water input or very small water input is experienced between the time the forecast is issued and the month for which it is valid. These possibilities are indicated by a 5% line showing water input exceeded only once in 20 years and a 95% line which shows a water input exceeded 19 out of every 20 years.

Short-Term Lake Level Warnings

Caution should be employed in using the forecast monthly mean levels. These forecasts do not take into account the effects of wind and barometric pressure changes during stormy periods which can affect the lake levels at different points by different amounts. Environment Canada also issues warnings and forecasts of sudden changes in lake levels on Lake Erie, as a result of storms. These are included in marine and public weather forecasts in the lakes region. ▲

EMERGENCIES *(Continued from page 8)*

"There is a seemingly never-ceasing crescendo of transportation activity involving ever-increasing numbers of people, ever-increasing quantities of goods, hazardous and otherwise, at even-increasing speeds," he told the Canadian Society of Forensic Medicine in a speech last October.

"The consequent threats of disaster are with us every day and we keep our fingers crossed in the hope that the incidents stay isolated and limited in scope, which, unfortunately, they do not always do."

Taking all such considerations into account, it would appear that EMO with its full-time staff of 92 and its national budget of about $5 million has its work cut out.

As one Canadian newspaper (Oshawa Times) put it in an editorial more than a year ago: "EMO — long a favorite whipping boy at home and abroad for politicians and the public alike — manages to stay alive because enough people (despite its flaws) believe that it can do the big job needed in an emergency situation." ▲

COMMUNICATIONS IN NATURAL DISASTERS

The author of this article, Harry E. Roderick, heads communications and warning research for the Defense Civil Preparedness Agency in the Pentagon. His conclusions are based on an analysis of the findings of an Ohio State University research team, which studied a series of major natural disasters from 1963-70 under a contract from the Defense Department's Office of Civil Defense, predecessor of DCPA. The article, reprinted here by permission, appeared in The APCO Bulletin, published by Associated Public-Safety Communications Officers, Inc.

Public Safety communications people often become so involved in day-to-day operational problems that little thought is given to disaster communications. Communities that have suffered severe effects from natural disasters have found that Public Safety Services and their communications systems were essential in saving lives and property. Disruptions to common carrier facilities placed major reliance on police, fire, and other radio communications facilities.

After cities have experienced severe disasters, they have become emergency communications minded. The cities that have suffered a repeat disaster were more prepared with increased communications capabilities. Information gained from disaster experiences can be useful to APCO members in communications planning for emergencies.

During the period 1963-1970, the Office of Civil Defense (OCD) directed Ohio State University to study a series of natural disasters that occurred within the Continental United States. Subject material included floods, earthquakes, hurricanes, tornados, etc. Although these emergencies differed in both their nature and in the kind of communities they affected, they were all of such a magnitude to warrant study. Bombings, civil disturbances, and campus conflicts were not included. The majority of the disasters studied involved local government agencies with specific mandates to respond in the event of large-scale emergencies. These include law enforcement agencies, fire departments, welfare agencies, offices of local government, such as mayor, councilman and safety director, public works and engineering departments and, frequently, public utility companies. As these groups may be located some distance from one another on a daily basis, in many disasters they were brought together in one location known as an Emergency Operating Center (EOC). Where this facility existed, better command and control of emergency forces and a more effective use of communications took place.

By definition, civil defense is the collective activities of government agencies, local, county, state and federal, attempting to protect its citizens and their property from the consequences of disaster affecting all or a substantial part of the population in a given locality. The responsibility for civil defense, just as the responsibility for all other government activities, rests upon the duly constituted officials of the government, whether it be city, county, state or federal.

Although these studies concerned the role of organizations in disaster and were not intended to be of a technical nature, it was possible to go back over the data contained in these studies and from some of them extract information concerning communications. These studies confirmed the statement that local governments in disasters depend heavily on public safety communications. Where emergency planning has existed, the mayor or city manager centered his plans around his present organizations; basically, the police, the fire, and public works departments. These organizations were supplemented by others as needed. This was civil defense in action.

Of all community organizations, the police departments are the most emergency oriented as the handling of minor emergencies are daily activities. In addition to these routine emergencies, most departments have plans for extended emergency operations. Unfortunately, a false feeling of security can develop that a department does not need to plan because emergency operations, even at the disaster level, are more or less normal duties. Despite this possibility, police and fire departments were found to be increasingly aware of the need for emergency planning and training and to have a greater ability and interest in learning from the experiences of other departments.

The police department is usually one of the first organizations to learn of an impending threat or of the impact of a particular disaster agent because it routinely monitors the community and its environment. The police often have communications inputs from fire departments, highway patrol, hospitals, etc. With these capabilities for communications and as a recipient of such information, police departments become the key link in local disaster warning. Many of the over 1500 Warning Points on the OCD National Attack Warning System (NAWAS) are manned 24 hours a day by police communications personnel. Similarly, tie-ins to weather bureau circuits for natural disaster warning are frequently in police stations.

Three kinds of organizational communications were analyzed with primary focus on the structural aspects: (1) internal communications, (2) inter-organizational communications, and (3) public-to-organizational communications.

A general conclusion is that problems in internal communications in times of disaster are inversely related to the degree of familiarity with the communications channels being employed. Communications problems in disasters frequently involve the use of message exchanges which are new and unfamiliar to the members of the particular group in question.

Organizations whose normal, daily activities and disaster activities are both dispersed geographically over a given area, such as police and fire departments, and those whose normal and disaster tasks are conducted at a fixed locale, such as hospitals, generally experience less severe communications problems. Groups whose normal activities are concentrated in one (or a few) fixed locations but whose disaster functioning requires dispersal of units into the field have greater problems. This category includes agencies such as Red Cross, Civil Defense, and the Salvation Army. Many problems arise, since a small professional staff which conducts daily activities is greatly expanded by volunteers during disaster operations.

Multi-shift organizations as well as agencies who rely on volunteers in disasters depend on public telephones as the chief means of mobilization; however, many people voluntarily report to work upon hearing of the existence of an emergency. Many organizations carried out mobilization procedures through the public broadcast media. The success in using public broadcast depends upon the time of the day that the disaster occurs. In Topeka this was very successful, as a disaster there occurred when most people were watching the evening news.

As is often the case, normal means of communications may not be operative as a result of the impact of some disaster agent. The Salvation Army in New Orleans lost its normal communications when Hurricane Betsy destroyed both its land-line telephone service and its radio antenna. Officials made use of both police radio and public broadcast media to secure the resources and information necessary to carry out relief operations.

Most emergency organizations rely on diesel-fueled generators to replace lost commercial power and often maintain duplicate communications facilities at different locations in the event of physical destruction of one of the sites. Although everyday radio equipment in the Lubbock Fire Department was damaged during the tornado in that Texas city, a second radio transmitter located in the city's Emergency Operating Center was available.

Simply maintaining everyday communications may not be sufficient to handle the increased volume of internal communications arising in a disaster emergency. The use of extra radio frequencies is often designated for such purposes. Additional radio portable equipment may be activated. Many cities and states have Civil Defense mobile communications vans or trucks which can be dispatched to the scene of major emergencies. Most large urban police departments maintain an emergency mobile communications vehicle which can be used at field command posts. Additional telephone service is frequently obtained on request from the telephone company which often maintains vehicles equipped with dial phones which can be transported to the scene of a disaster.

Often, not even the expansion of existing communications facilities is sufficient to handle the communications needs of a disaster. Amateur radio and Citizen Band operators can help to fill this void. Another common adjustment to increase communications capability is the use of certain personnel as messengers.

There are limits beyond which the communications capability of an organization can be expanded. The alternative is to try and reduce the demands themselves. One means is to separate out messages received from the public from those originating within the organization itself. In concentrated organizations like hospitals, this is often more complicated. Message runners frequently have to be used when telephone switchboards become jammed with incoming calls. Another means of reducing demand on internal communications channels is through the invocation of priorities. This means, in effect, that only messages of direct relevance for disaster functioning are transmitted, while all other messages are either suspended or held until time permits.

Police departments always exercise a degree of selectivity in responding to the demands made upon them even during routine operations. For example, a report of a burglary takes precedence over a complaint of a barking dog. The police, perhaps more than any other organization, are accustomed to placing priorities on the various demands made upon them and allocating their resources accordingly. This pattern is continued during disaster operations.

Early in an emergency period, some internal relocation of personnel is usually made. Although communications are essential during normal times, its importance cannot be over-emphasized during disaster operations. Without accurate information, the disaster officer can not begin to make decisions regarding either the deployment of men and equipment or any operations the police might undertake.

In any disaster, initial police activities center around the warning and evacuation with subsequent shifts to search and rescue and finally to the establishment of security. During the search and rescue phase, routines are severely disrupted. However, if communications are handled effectively, the police tend to operate rather smoothly as they cope with the disaster situations.

The communications center is virtually the heart of operations of any police department in normal times. When disaster strikes, this importance becomes even more evident. This volume of communications traffic increases tremendously and is centered about reports of damaged areas, requests for equipment and men, and instructions for their deployment.

Communications during a disaster becomes a problem because of sheer volume. One factor lessening the impact of the disaster on communications is that minor complaints tend to decrease and become almost nonexistent during disaster operations. Dogs suddenly stop barking and people no longer hear "strange noises" downstairs.

The communications of damage reports and subsequent requests for aid tend to be heaviest in the early phases of disaster operations. Dispatchers frequently mention that a large number of officers after a disaster

want to give a running account rather than overall summaries of damages. Reasons for this vary from the excitement of the moment to a lack of understanding of the nature of the information needed by the dispatcher. Such accounts clog valuable air space and make it difficult to evaluate the situation and get out important message.

A task usually given to police communications is that of contacting by telephone, if operative, various businesses which have equipment needed in the field. This equipment may vary from flashlights to cranes. Also being contacted are various hospitals. It has been found that many of the lists of phone numbers and even addresses are often out of date. This may not be a problem to larger police departments as they often own most equipment they need in a disaster. Unfortunately, few departments are so equipped. Where a community has an established EOC, maintaining such lists of emergency resources are a responsibility of Civil Defense personnel.

Radio is the primary means of interaction among field units, but this often must be supplemented by runners or cruising patrolmen. The establishment of field command posts with a patrol car or similar unit serving as a field telephone is a main supplementary means of communications in disaster areas. Perhaps the greatest value of field command posts is that they act as a filter between central headquarters and the field. Unnecessary communications are screened out and dispatchers are relieved of some of the pressure their job entails.

Telephones provide one means of interorganizational communications where these remain in operation following the onset of some disaster agent. Most common is the use of the normal-dial telephone-exchange service. But more and more organizations with emergency responsibilities are installing at least one additional unlisted number which can be used exclusively by other emergency organizations. Several cities have turned to "hot-line" systems; that is, direct lines that bypass the regular switchboard exchanges.

Radio communications is less common between organizations than within them. Exceptions are in small cities where several municipal organizations, such as engineering and works departments, often share a single radio frequency. A second exception is found in cities where a number of agencies are tied together by a Civil Defense radio network.

Teletype systems are used widely by the Weather Bureau with monitoring by mass media, police and fire, and service agencies, such as streets and engineering departments. Hospitals, Red Cross chapters, utility companies and various private ambulance and wrecker services often receive emergency information in this manner.

In order to provide close coordination of emergency organizations, local communities bring together in one physical location key representatives of these organizations. This results in the formation of a supra-organization variously labeled a command post, disaster headquarters, emergency communications center, or an Emergency Operating Center (EOC). In a number of disasters, the establishment of such centers had been unplanned, reflecting an almost natural need for a central location where various officials can be in direct contact.

The development of effective interorganizational communications and coordination in the face of disaster is increasingly being removed from the realm of spontaneity and chance through the efforts of Civil Defense. Dual-use EOC's are favored and common use is the housing of local police and fire dispatch centers.

Emergency centers such as these do not make inter-organizational coordination an automatic certainty. The most consistent overall failure is to adequately bring in private organizations. An example is that often when disaster strikes hospitals are generally the last of the local emergency organizations to learn of the situation. More serious is the lack of feedback information from the disaster site so that proper preparation can be made for casualties. The absence of effective inter-organizational communications may lead to an uneven distribution of patient loads among various local hospitals. Such failure to include hospitals in preplanned disaster organizations and the resulting communications difficulties once the disaster occurs can be eliminated by established hospital radio networks. These typically link all local emergency hospitals as well as the police and fire departments.

Specific changes in organizational communications following a disaster involve the addition of some sort of "hardware" or physical facilities. This usually involves more emergency generators and "walkie-talkie" portable equipment. Two of the most common actions are the expansion of stations on Weather Bureau teletype systems and the establishment of radio networks among local hospitals, police, fire and ambulance services. There is the emergence of a new spirit that results in various groups working more closely together following their mutual involvement in the community-wide emergency situation. Communities with prior disaster experience are more likely to have an EOC and an arrangement that facilitates more efficient and effective communications among emergency organizations. Information is passed over these networks more rapidly, accurately, and systematically without loading communications channels.

Problems of public-to-organization communications in disaster are covered by the notion of convergence. This term is used to refer to an ever-present phenomenon in large-scale emergencies when organizations are inundated with informational messages from the public. Public-to-organization communications for the most part is carried out by telephone. In localized disasters, such as explosions, where only a small portion of the community's telephone service is directly affected, organizations are usually inundated with informational messages from the public. However, in diffuse disasters such as hurricanes where damage and destruction covers an

(Continued on page 18) **COMMUNICATIONS**

EMERGENCY COMMUNICATION CENTRE

by
N. J. Dupuis, Emergency Planning Officer
Town of Bridgewater
Municipality of the District of Lunenburg

A unique Emergency Centre has been established to serve most residents of Lunenburg County. At the suggestion of the Warden of the Municipality of the District of Lunenburg, Mr. Charles E. Walters, and the Mayor of the Town of Bridgewater, Mr. John Hirtle, it was agreed by their councils that consideration be given to having one telephone number which could be called to initiate emergency assistance.

The Municipal Emergency Measures Organization was requested to carry out this suggestion and the Emergency Communication Centre resulted.

The Centre was established to provide assistance to residents living in the two municipalities for any type of emergency. All types of services are required to meet the needs of residents when either a natural disaster such as a flood occurs or a man-made emergency such as a car accident happens.

When a call is placed to the Centre, the calling party is asked to provide all details necessary to initiate help for the situation. This includes the name of the party calling, exact nature of the problem, where it is located, etc. The call is recorded in the register with time call was received as well as what emergency services were dispatched and at what time. If it is a health emergency, the time the ambulance leaves for the scene and arrives at the hospital is also recorded. This system enables the Centre staff and other emergency services to evaluate their efficiency.

The Town of Bridgewater recognized the need for proper radio communications and their system at this time was most inadequate. Council authorized the purchase of UHF radio equipment for all town vehicles, police and fire departments. In addition, the Town Office, town garage and Emergency Communication Centre were also equipped with a radio remote set. The police have a private frequency, with the General Service Vehicles, including the fire department, having a combined frequency. The mutual aid (E.M.O. frequency) for use by fire departments during combined fire fighting operations is also available to the police, Emergency Communication Centre and fire department. The Town agreed that other fire departments located within radio range could utilize this system. The range of coverage has proven to extend to almost the entire area of Lunenburg County.

It was immediately recognized that radio communications was essential for other emergency services, and especially the health service. An agreement was reached with most ambulance operators in the county that a health communication system be established. After a lengthy investigation and discussion, the system was approved by all concerned. The system will be on a UHF frequency and will allow instant communications between most ambulance operators and the two hospitals in the county; the Fisherman's Memorial Hospital, Lunenburg, and the Dawson Memorial Hospital, Bridgewater, as well as the Emergency Communication Centre.

The system is very basic in that any resident may obtain assistance by dialing Bridgewater 543-3133, if on the local exchange, or requesting the operator for Bridgewater 543-3133. All long distance calls are accepted collect. All requests for assistance are met without question. There have been no crank calls received by the Centre, since its inception on November 28, 1972.

All types of calls are accepted, except fire calls. Normally these calls are referred to the applicable fire department as service is usually available at the stations or through the telephone operator.

If a long distance call is placed by a telephone operator on behalf of a resident, the operator remains on the line to render immediate service if a long distance call is required from the Centre.

This project proved to be such a success that two other municipalities in the County, the Town of Lunenburg and the Municipality of the District of Chester, annexed in February 1973 with the Town of Bridgewater and the Municipality of the District of Lunenburg to provide this Emergency Communication Centre service to their residents.

The Centre is staffed 24 hours a day, 7 days a week, 365 days a year. It does not replace the normal municipal health, police or fire services, but is a supplement to them. Instant service is available by calling the Centre and, after more than three months of operation, it has proven itself to be extremely successful in every way.

A table depicting the numbers and types of calls received is shown at Figure 1. To mid March 52 calls have been received — 3 in November; 18 in December; 18 in January; 6 in February; and 7 in the first two weeks of March.

Bridgewater 543-3133 is fast becoming a very important number to residents of Lunenburg County and can be found listed by home and office telephones; carried on their persons; and is often on their minds.

A number of important fringe benefits resulted from the initiative and concern shown by the Councils of the Town of Bridgewater and the Municipality of the District of Lunenburg. Some of these are:—

- *One Telephone Call* will answer any emergency

need — e.g. car accident RCMP, ambulance and hospital all notified by one call to the Centre.

- *Health Services* are better organized, thereby providing better service to the public; that is,
  - — All ambulance operators are now fully trained and qualified in first aid by the St. John Ambulance Association.
  - — When an ambulance is dispatched the hospital concerned is alerted and a physician is called to the hospital.
  - — Patient arrives at the hospital to find all alerted for his arrival.
  - — Medical advice and assistance is available 24 hours per day.
  - — Ambulance attendants authorized, with full support of the medical practitioners, to administer first aid at the scene of any accident and transport patient to the nearest hospital without awaiting arrival of a doctor at the scene.
- *Communications*
  - — Instant radio communications for fire fighting services, and all health services. Plans are being developed to include doctors and other emergency services in the Health Radio System.
  - — A citizen's band club of Lunenburg County has been organized to provide communications during emergency situations. This club is called the Bluenose General Service Radio Club.
  - — The Centre will be equipped with a citizen's band monitor and transmitter set.
  - — A ham radio antennae is being installed on the roof of the Town Hall in Bridgewater.
- Public awareness of emergencies and the role that is played in combatting emergencies by public works, police, firefighters and others.

The Centre is a first for Nova Scotia. Perhaps it will encourage other municipalities to examine their emergency services. The work carried out in Lunenburg County should prove that E.M.O. is a strong force in assisting the residents of our province during emergencies.

FIGURE 1

EMERGENCY COMMUNICATION CENTRE — REPORT MONTH OF (27 Nov. 1972 to 14 March 1973)

	Town of Bridgewater	Municipality of the District of Lunenburg	Municipality of the District of Chester	Town of Lunenburg
Car Accidents	3	10	2	1
Other Accidents	—	—	—	—
Other Services' Information	6	1	—	—
Police	4	2	—	1
Medical Advice	5	2	—	—
Public Works	1	—	—	—
Ambulance	7	4	—	—
Other Emergency Assistance	1	2	—	—
Total	27	21	2	2
Grand Total				52

WHAT DID WE DO IN 72?

Well now, according to the records, we — that is Civil Defence workers across the Province of British Columbia all together — did quite a lot.

Civil Defence workers took part in 93 land searches for lost persons, 20 marine search and rescue missions, 7 air searches for downed or missing aircraft, 10 rescue operations from vehicles wrecked in accidents, 37 flood operations, and 8 fire emergencies.

These 175 emergency-service tasks involved 2,852 Civil Defence workers who together contributed 145,204 man-hours of work.

During the year, 4,459 British Columbians took part in 267 municipal training tasks for a total of 156,065 man-hours, and 283 candidates attended 27 Provincial courses for 9,905 additional man-hours.

Added together the time expended in emergency tasks and in training amounts to 311,174 man-hours, which is equal to 150 persons working 40 hours a week for a whole year.

Calculating the time value at the modest sum of $2.50 per hour, it would amount to $777,935.

Nearly 2,000 new volunteers registered in Civil Defence during the year.

Arrangements were made with the amateur radio operators to form a Civil Defence Amateur Radio Net which at year-end had approximately 160 members.

Arrangements between the Canadian Red Cross and Civil Defence were finalized by which the Red Cross assumes the responsibility for managing the voluntary aspects of emergency welfare such as registration and inquiry, emergency lodging, feeding and clothing.

It was a busy year. We are glad that we were able to help those we could help. We feel confident that we are now a little more able to help than we were a year ago and we pledge to continue to strive to be even more able one year hence.

BEATING DISASTER TO THE PUNCH

by
Dana Adams Schmidt
Staff correspondent of The Christian Science Monitor — December 1972

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The people who man the nuclear war early warning network now are planning to bring you 30-second flood, hurricane or earthquake warnings . . .

WASHINGTON

On the night of June 9 1972 it rained at Rapid City, S.D. About 8:30 p.m. the creek that flows through the gulch around which the city is built began to rise. The townspeople had seen that many times before, and few paid the rising creek any heed. But Ron Stephenson, commissioner for Pennington County, was worried. The rain kept coming, and the river kept rising.

At 9 p.m. Mr. Stephenson sounded the sirens in Rapid City to get the attention of its citizens. Every old resident knew that meant the creek was on the rampage. But they had heard that siren before, and the creek had never actually broken over its banks. Some looked out at the raging creek and pouring rain, and a few collected their families and went to spend the night with friends on higher ground. But most just went to bed.

About 11:15 p.m. it began to rain much harder. The water came down like a cloudburst, and Mr. Stephenson sounded the sirens again and ordered his sheriffs' deputies to race up 3 or 4 miles of roads along the creek, pounding on doors to get people out.

Then it happened. The creek came up like a tide. In 15 minutes it rose 15 feet. It had never happened before. The water slammed into the houses along the creek like a moving wall, and swept them out.

Two hundred twelve people were lost that night. Three hundred homes were swept away, and the damage was estimated at $100 million. Five thousand persons were left homeless.

Months later Ron Stephenson went to Washington and talked to officials of the Defense Civil Preparedness Agency about the disaster. And this is what he told Ren Read, the assistant director of the agency:

"If I had had some way of reaching those people during the last critical 15 minutes, to tell them: 'Get out of your houses and onto higher ground — the river has gone wild,' I could have saved almost all of them."

Such a system is now in formation. It is called DIDS, for decision information distribution system, which is Washingtonese for emergency warning system. Originally designed to warn the public of impending nuclear attack, it will eventually be capable of informing people within 30 seconds all over the United States — or in just one state or one county — that enemy missiles are approaching or that natural disaster threatens.

Early next month the first segment of this system will go into operation experimentally in 10 East Central states: Maryland, Virginia, New York, West Virginia, Delaware, New Jersey, Ohio, part of Massachusetts, part of North Carolina, and part of Connecticut.

To start with the messages will go out to 150 official points — governors' offices, emergency centers, police and fire department headquarters. Gradually it will be expanded to 500 recipients including some in the remotest parts of the area.

If all goes well and Congress provides the money, this will be gradually expanded into a nationwide system whose No. 1 control console will be under Cheyenne Mountain at Colorado Springs, Colo., in the same room with NORAD, the North American Air Defense Command.

Early warning radar links

NORAD is linked to the Air Force's early warning radar screen in northern Canada. It is here, therefore, that the first word of nuclear attack would be likely to be received, about 15 minutes before the first missiles hit American cities.

If anything went wrong with the command console at NORAD, control would shift to a backup station at Denton, Texas, and after that to console number 3 at Olney, Md.

The Olney console and its transmitter, 50 miles away at Edgewood, near the Aberdeen Proving Grounds, in Maryland, are the parts of the system already in existence.

In the completed system, Edgewood would be one of 10 transmitters in the continental United States linked together by control stations at Ault, Colo., and Cambridge, Kan., communicating together and transmitting to thousands, eventually millions, of receivers on a radio frequency of 179 kilohertz.

This low-frequency radio system, backed up by telephone lines, would tie together about 40,000 state and local warning points. At 5,300 of these, the DIDS signal would automatically cause sirens to sound. At 34,700 points, a voice message would be received, and 1,500 of these would get a teletype message as well as the voice message.

Nationwide warning coverage would at this point be increased by about 40 times over what is at present available, but that would be only the beginning.

While Washington officials are testing the first 10-state network, research is proceeding to develop small individual receivers, to cost not more than $15, which Americans could voluntarily keep in their own homes. Radio Corporation of America already has developed one prototype, built around two so-called "chips," the integrated circuits that have carried radio reception beyond the transistor stage, and DIDS program managers have received bids from other companies for alternative models as well as for a receiver that could be installed in existing television sets and radios at home, in cars, and on boats.

The specifications for these receivers are based on opinion surveys carried out by the Defense Civil Preparedness Agency. The surveys showed that 42.2 percent of respondents would spend $10 or less at the most on such a device, and that 41.9 percent would spend between $10 and $50. The program managers concluded that a device costing not more than $15 would find the widest use.

Research on the kind of warning the receiver would emit, to waken its owners in time of emergency, led to adoption of a yelper, similar to the sound commonly used by ambulances in Europe. Overuse, it was discovered, has deprived the conventional siren sound of much of its attention-getting quality.

Possible commercial value seen

All this research may well turn out to be of great commercial value to the American radio industry.

Apart from the cost issue, the agency's researchers put the following proposition to interviewers: "It has been suggested that a household might benefit from an inexpensive emergency-warning device attached to a radio or television set. In other words, it would turn the set on to warn you against major natural disasters or in the event of a nuclear war."

The survey showed that 32.5 percent strongly favored such a device; 36.5 percent that they favored it. Undecided were 12.6, opposed 7.8, strongly opposed 2.6, while 8.1 percent did not know or refused to answer.

The survey did not raise the "big brother" issue subsequently aired by some newspapers and magazines. According to this criticism DIDS could in the hands of some unscrupulous future dictatorial regime become an instrument of oppression similar to the devices described in Orwell's book, "1984." The vision conjured up is that every American home would be obliged to have its little black box, which would turn itself on and over which big brother would exhort and instruct his brethren, whether they liked it or not.

The answer thereto, explicitly stated by Robert B. Martin, project manager in the civil preparedness agency who has fathered the DIDS project since its inception in 1964, are three:

- Possession of a DIDS receiver is voluntary.
- While this system is controlled by the federal government, all other systems of communication, by commercial television and radio, remain independent.
- There is no real comparison with the device imagined by Orwell which was a two-way telescreen over which big brother could not only talk and be seen by the brethren but through which he could see and hear them in their homes.

The Olney control console would be the federal government's point of input. Through this station and the transmitter at Edgewood, the president of the United States could address the multiple control points and the millions of Americans who opted to have a receiver in their homes.

In time of war this theoretically could become the government's only means of communicating with the country, because it is the only fully "EMP-protected" communications system.

This means, as was recently pointed out in an address by John E. Davis, the former governor of North Dakota who is director of the Defense Civil Preparedness Agency, that all its components, from the three consoles at Colorado Springs, Colo., Denton, Texas, and Olney, Md., through the 10 transmitters scattered across the country, to the official reception points and the home receivers are protected by continuous shields of steel sheeting against the electro-magnetic pulse that would emanate from a nuclear explosion.

Mr. Davis pointed out that an enemy could, by setting off a nuclear explosion in the stratosphere, produce an electro-magnetic pulse that would act something like a bolt of lightning on electrical equipment in a area of hundreds of square miles, thereby knocking out all unprotected electrically based means of communication.

The Olney console is housed in an underground federal regional center directed by John E. Bex. He has available in this underground fortress enough food and water to take care of his staff of several score for one month in time of war.

Mr. James S. McNair presides over the Olney warning center's contribution to the nation's existing system which consists of a leased network of telephone and telegraph lines to 1,000 places from which it branches out to state-operated police or other communications systems. It makes use of Associated Press and United Press International lines. At the end of the system, state and local officials are informed and sirens blow.

This existing system is immensely valuable in issuing warning of flash floods, hurricanes, and tornadoes. Sometimes police use it to tell police in another state that the suspect they are pursuing is about to cross a state line.

The limitation of this system is not only that it is not completely EMP protected, it is manual. At each stage fallible human beings must relay the warning, so that it could take 30 minutes to spread a warning across the country — too slow to save lives in a nuclear attack, too

slow to save lives in such an emergency as the sudden rise of the creek at Rapid City.

The DIDS console, gleaming and waiting to be put to use at one end of the Olney control room, would have capabilities of another order: The operator sitting in front of that board could, by pushing a red, round button, sound an almost instantaneous national alert. For a split second after he pushed that button, he could reconsider. He could still cancel the alert by pressing the recall button. Then, if he hit the release bar, the alert would go out.

The Warning 1 button would alert the country to something less, telling people to make last-minute plans for an expected alert. Warning 3 would inform them the military have mobilized and all government departments should be on alert.

The console's capabilities are refined with respect not only to the message but to the way in which it is delivered and the place where it will be received. It can go out by voice and teletype, or by one of these. The operator can play a tape; plug in someone, such as the president, a governor, or a police chief, or use his own voice.

He can address all receivers, all federal agencies, all state governments, local governments, industry, broadcasting stations. Or he can address any one of these categories in a single state or in a single county — in some places, in part of a county.

He might be relaying a message from the Weather Bureau to Florida in such terms as: "This is an advisory. All people south of Jacksonville should start moving north. Hurricane X will hit the coast between 2 and 3 a.m." Or he might address one county, saying: "The river X is rising. We advise all residents in its vicinity to evacuate their houses and seek higher ground."

DIDS will have its own backup antenna that can be raised from below ground to pass communications at Edgewood.

Site difficult to work on

Edgewood occupies a splendid site near the mouth of the Little Gunpowder River from which one catches a glimpse through the trees of Chesapeake Bay. Chosen because it was federal land and gave maximum radio coverage, it proved difficult to work on. Westinghouse, which had the contract for the project, found it necessary to increase its cost estimates not only because of unforeseen problems in developing technical apparatus but because of deep mud and marsh and high groundwater level.

The builders were obliged to give the underground structure special waterproofing, and one of the anchors of the cables holding the 700 foot antenna had to be sunk in a swamp at a cost of many thousands of dollars.

The end product is probably the most durable transmitter on earth. The bridge cables that hold it up and form part of its electrical system are 2⅛ inches thick, capable of withstanding the most violent storms to be expected in this part of the world and the impact of a nuclear missile within a few miles of the site.

Thus far the installation has not been treated as anything especially secret. The builders expect the transmitter, in particular its welded steel EMP protection, with special shields to cover the outlets and inlets for plumbing and electrical connections, and its reinforced tower, to become a showpiece for foreign visitors. They could not hope to see these features anywhere else except in supersecret military installations.

Project manager Robert Martin believes that the Cuban crisis, which made Americans receptive to all kinds of civil defense, had much to do with getting DIDS off the ground. While scientists had given such a system general consideration for years, he began engineering development seven years ago.

Congress has appropriated just over $5 million to the project for fiscal 1971 and 1972, including Westinghouse's initial cost overruns. Further transmitters of the kind will cost about $2.5 to $3 million each, he believes.

What worries Mr. Martin and his colleagues most is the big-brother charge. He believes that when Americans appreciate both the degree of protection against sudden disaster of all kinds offered by DIDS and the limitations of the system, they will give it enthusiastic support. ▲

COMMUNICATIONS *(Continued from page 13)*

entire community, as might be expected, numbers of message from the area public are not such a problem. The principal complicating factor here is that calls coming into the community from outside seem to increase as the scope of the disaster increases.

Most organizations on a normal basis have a certain amount of resources (both equipment and personnel) devoted to handling incoming calls from the public. Since during disasters incoming calls can swamp an organization's switchboard, it is important to have a number of unlisted telephone lines reserved for emergency outgoing calls.

APCO, representing Public Safety Communications, can encourage local government disaster preparation by having its members promote communications readiness through detailed emergency planning on the maximum use of existing communications resources. Training should emphasize the evaluation of previous disaster experiences. Disaster communications plans should be periodically reviewed and updated. Such measures will assist in obtaining maximum effectiveness and utilization of existing communications personnel and equipment resources if major disaster situations occur in your community. ▲

THE ROLE OF THE ARMED FORCES IN CIVIL DEFENCE

by
Jean Ravail
Inspector General of Administration

What is meant by civil defence and maintenance of order? What is the role of the armed forces in this respect? Co-operation between military and civil authorities is indispensable not only during serious incidents, but on a permanent basis: without the assistance of the armed forces, there can be no civil defence, at least not under the ordinance of 7 January 1959 and the decree of 13 January 1965.

The author of this article, Jean Ravail, is France's Inspector General of Administration in the Ministry of the Interior, and Director of the Civilian Affairs Division of the General Secretariat for National Defence; he is a specialist in civil defence problems and in particular in related legislation.

The title of this article may sound somewhat surprising because to many people the civilian and the soldier live in distinct worlds and have different concerns. To each his own seems to be the commonly accepted saying in the field of defence, as in others.

That, however, is precisely the misconception that must be corrected. Just as civil authorities take an active part in military defence, so military authorities have an important part to play in civil defence for the simple reason that military and civil defence are inseparable and form a single all-embracing entity.

But the meaning of the expression "civil defence", often considered enigmatic, must be clarified. What is civil defence? A distinction must first be made.

In the broad sense of the word, civil defence is defence of a non-military nature. This definition may sound obvious, but it does have value in that the expression unites two terms not usually brought together and testifies to a reality of which people are not often aware: the time is passed when war took place only between armies and on limited battlefields; defence is no longer the prerogative or monopoly of the military. Now it affects all of a nation's activities.

More specifically, civil defence is the defence for which the Ministry of the Interior is responsible under the ordinance of 7 January 1959, which specified the general organization of defence, and under the decree of 13 January 1965 concerning the organization of civil defence. As a result of these two basic documents, the Minister of the Interior has three essential missions to carry out:

- ensure the continuity of government;
- maintain public order;
- protect the population, materially and morally.

If it bearing these three missions in mind that we intend to examine the contribution of the armed forces to civil defence.

The first task of the Minister of the Interior is to "provide for the security of public authority and administration" so that the government and its officials may at all times and at any place be able to make the decisions required and have them carried out.

This means first that an inventory of the buildings, works and facilities indispensable to the functioning of public institutions should be drawn up in peace-time (defence is not a matter for improvisation) and secondly that action be taken to ensure their defence, when necessary.

This is the purpose of the various inventories that have been drawn up at national, zone and departmental levels which contain the majority of the "sensitive" points of special significance for civil and military defence. Among these points are facilities considered essential to the government's freedom of action: command institutions (Elysée Palace, Hôtel Matignon, ministries, government command posts) and information or communications installations (high-frequency transmitters, radioelectric centres, telecommunication stations), officially listed by the Defence Council.

To ensure the protection of these facilities on a priority basis, the necessary 1st or 2nd category armed forces are made available to the Minister of the Interior. That is why the Elysée, the Matignon and even the National Assembly are protected on a permanent basis by the Republican guard.

The military authorities do not limit themselves however to such permanent and point security measures; they work in close co-operation in the development of general measures for prevention and intervention to protect facilities considered vital to the nation. These measures are listed for each department in the protection plan established by the prefect in agreement with the military authorities, and not just with their co-operation. This nuance should not be overlooked.

Prefects develop their protection plans on the basis of the needs of their departments and in conformity with the guidelines set by the zone prefect.

The zone prefect, who directs the civil defence action of departmental prefects within his zone, establishes a protection plan for his zone on the basis of directives received from the Minister of the Interior. In preparing this plan and detailing the missions to be carried out by various police forces, the zone prefect uses the orders drawn up by the commander of the military area concerned governing the use of military force throughout

the zone (Administrative zones and military regions cover the same area).

The moment when the protection plan will be implemented remains to be determined. This decision can only be made by assessing the threat on the basis of the general situation and reliable information. In this respect the prefect has the civil police at his disposal, but he can also call upon the Gendarmerie, a military unit, a fact that tends to be overlooked because of the close and constant relations of the Gendarmerie with prefectural authorities. The acquisition and distribution of information are the main activities of the Gendarmerie. These activities are carried out to the profit of both military and civil authorities, but the latter are its privileged correspondents since most of its messages and reports are intended for them.

Thus in peace-time, the armed forces contribute in various ways to ensure the regular functioning of public administration and to prepare the application of the measures that would be necessary in a crisis. In such an event, the role of the armed forces increases. This is so because as soon as the situation deteriorates, government action is directed to meeting the population's essential needs, so that it is forced, in the event of a strike, for example, to ensure the minimum of public services.

Of course, ordering employees in the public sector back to work should enable the government to solve the problem, but experience shows that this procedure meets with many difficulties of a practical and psychological nature: preoccupied with the task of maintaining public order, police forces have little time to deliver such orders, and the implementation of authoritarian measures, although justified in principle, is not received favourably by public opinion. Hence the government's tendency to call upon the armed forces to replace striking civilian personnel on a temporary basis. This explains why during every public transport strike, military trucks immediately appear on the main roads, and why the Esplanade des Invalides quickly becomes a military bus depot. The same applies to strikes of garbage-collectors: household waste is picked up by young soldiers called out to drive municipal garbage trucks. And, finally, it is recalled that during the events of May 1968, air-traffic control, and part of the civil air transport service, were ensured by military personnel.

In parallel with the above well-known measures, other less spectacular military action is taken during crises, namely the increasing of the number of sensitive locations guarded.

It is obvious that the safeguarding of a certain number of essential facilities must be ensured and that when there is a risk of the government machinery's seizing up, precautions must be taken to ensure its continuous operation: the armed forces are there to do this, at least to the extent that they do not have to fight. Even if the armed forces engage in combat — which supposes the application of defence plans and no longer of protection plans — their role in the field of civil defence still remains: civil and military plans can apply simultaneously as well as successively.

Finally, in the event of a war, the military communications system will ensure government communications, especially with operational command posts.

This form of military participation in civil defence is fortunately less frequent than its participation in the maintenance of order, which we will discuss next.

The principle of the participation of the armed forces in the maintenance of order is in accordance with our republican tradition, since it is contained in the Law of 14 September 1791 on the Public Force. Article 1 states:

> "The Public Force is instituted to defend the State against enemies from the exterior and to ensure the maintenance of order in the interior . . ." Article 2 reads: "The Public Force includes the Army, the Navy and the special force intended for service in the interior . . ."

More succinctly, Article 20 of our Constitution states that the government "has at its disposal an administration and an armed forces." Civil defence missions with which this armed force may be entrusted vary with circumstances.

During calm periods, when the only objective in maintaining order is to prevent disturbances, most of the measures taken are of a dissuasive nature. Their main objective is to make a show of strength in order not to have to use it: troop movements, march pasts, manoeuvres, flights over certain points, calls by warships, are all demonstrations of the military presence. Whatever their nature, they are an incentive to calm and prudence. This indirect assistance is provided at the request of the civil authorities normally responsible for keeping order.

The procedure is altogether different when the government has to re-establish order or suppress disturbances. The regular or 3rd category force only takes part in such actions when called upon by the civil authorities. This is generally the prefect, although in some cases other authorities, such as the presidents of parliamentary assemblies, magistrates, mayors and even police inspectors are empowered to do so.

The requisition which is quite peremptory, is actually an order (although the word itself does not appear in the text) but one that is accompanied by certain guarantees. These guarantees are specified in the detailed regulations contained in the Interdepartmental Instruction of 20 July 1970 concerning the participation of armed forces in the maintenance of order.

First there is a provision that except in an emergency, departmental prefects must submit their requisitions to the military region commander through the zone prefect. An order of priority can therefore be established among the requisitions submitted to the zone prefect. Military units need not fear that they will have more commitments than they can meet.

Although the prefect makes the decision as to the type of intervention required in the circumstances and the moment when military support is necessary, the

armed forces nevertheless retain a margin of initiative. The military authorities are obliged to carry out the requisition and to comply strictly with their mission, but since they are responsible for executing the requisition, they are the sole judges of what means to use. Thus, as a principle, the sharing of responsibilities is perfectly balanced.

It is appropriate to add that in practice the separation of jurisdictions is not as strict. Just as civil authorities consult the military on the advisability of using the armed forces, so the military consults civil authorities on the choice of military units to be used.

Using force to disperse crowds does not necessarily imply the resort to arms. In most cases, simple crowd dispersal or passage techniques suffice. Should the use of arms become necessary, a special measure, an order to disperse, must first be proclaimed twice by a civil official. Therefore, it is only in the event of violence that prevents them from carrying out their duties that the armed forces are authorized to open fire without respecting the grave procedures deliberately designed to prevent an ill-judged response.

The intervention of military authorities in the maintenance of order is not restricted to carrying out measures prescribed by civil authorities. Should the government declare martial law, military authorities may be called upon to replace civil authorities for the maintenance of order. As specified in the Law of 9 August 1849, "the powers with which civil authorities were endowed for the maintenance of order and in respect of the police are transferred in full to the military authorities" as soon as martial law is declared; such a declaration presupposes the existence of an imminent threat from foreign aggression or armed insurrection. Our history has examples of the implementation of this exceptional form of government.

In this respect, it should be recalled that martial law implies not only the transfer of normal police powers from civil to military authorities but also the exercise of special police powers, such as the right to search houses during the day or night and to order the surrender of arms.

However, these unusual common-law powers granted to the military authorities during a state of siege are inferior to those granted to the civil authorities in an emergency under the Law of 3 April 1955. There is certainly an anomaly since a state of siege involves a much more serious situation than does a state of emergency. A state of emergency may indeed be declared simply for serious violations of public order.

To this type of traditional intervention on the part of the army for the maintenance of order during a state of siege, two other forms of intervention were recently added. Article 17 of the 1959 Ordinance concerning the general organization of defence stipulates that in military-operation zones and at the government's decision, the designated military commander becomes responsible for public order and for the co-ordination of civil defence measures with military operations. Moreover, Article 24 stipulates that senior commanders may be delegated the authority in civil defence matters, that is required for their operational missions.

These two articles, which have not yet had to be applied, may cause more problems than solutions, especially as regards the relations of local military authorities with the Ministry of the Interior.

The role of the armed forces in the Civil Defence organization which is the third phase of civil defence, can be more readily defined.

One only has to travel on the main roads during the holidays to see soldiers of all ranks from the Armed Forces Medical Service manning the first-aid tents. These soldiers, who are in permanent liaison with the Gendarmerie and the departmental relief services, form a close-knit team of technicians who can give the injured emergency care, resuscitate them, and transport them to the nearest hospital. This system, first set up on an experimental basis in the summer of 1969, has since been extended throughout the country: it is known as the Highway Medical Relief Plan.

Another plan, the O.R.S.E.C. plan, which is older and better known since it goes back to 1952, provides for the co-operation of "permanent armed forces units in carrying out urgent missions pertaining to rescue, relief, the re-establishment or maintenance of lines of communication and the establishment of additional communications during the mission." The plan is to be implemented only when absolutely necessary, but experience has shown that during catastrophes, such as that which occurred when Highway A.6 was covered with snow at Christmas 1970, effective action cannot be successfully attempted without the army's assistance. There is nothing surprising in this, since of all the public or private organizations that can be called upon, the army is the best qualified to intervene quickly and readily because of the equipment and personnel at its disposal, especially on an alert basis. That is why the Instruction of 5 February 1952 on the organization of relief at the departmental level in the event of a major disaster was countersigned by the Minister of the Armed Forces; why O.R.S.E.C. departmental plans are established by prefects in liaison with military authorities; why the type of co-operation and the methods of participation of military units are specified in agreements drawn up in advance under the Instruction of November 1966 concerning the participation of the armed forces in non-military tasks and why the Law of 9 July 1970, incorporated into the code of national service dated 10 June 1971, specifies that military units may be entrusted with civil defence tasks, as a secondary or temporary duty.

The latter provision has not remain unused, since without waiting for the decree establishing the Civil Defence Corps, the Minister of National Defence decided to re-inforce the contribution of the armed forces to this mission in two ways:

- by establishing at Brignoles (Var) a second Civil Defence Instruction and Intervention Unit similar to the one in operation since 1967 at the Instruc-

tion Centre for the Paris Fire Brigade at Villeneuve-Saint-Georges;

- by forming specialized military fire-fighting units.

The credits required for the establishment of the 2nd Instruction Unit are contained in the VIth Plan in the Mediterranean Forest Protection program. Infrastructure expenses appear in the civil defence program established by the Prime Minister and equipment expenses in the budget of the Ministry of the Interior.

As for the specialized military units, seven were established in 1971 in southern France. Five others will be set up in north and the east parts in 1972.

In this way the personnel who will be called upon to serve in the different formations of the Civil Defence Corps in war-time can be trained in peace-time. These formations are the mobile columns, shelter companies and civil defence centres.

The task of the Minister of the Interior in this respect is the more difficult since in addition to ensuring the physical protection of the population in peace and war, he must also maintain and strengthen the people's resistance to aggression. This permanent mission, entrusted to him by the decree of 13 January 1965, can only be carried out with the co-operation of the Minister of Information, when there is such a minister, or in agreement with the Prime Minister. It also implies however the participation of the army. Indeed, when the spirit of defence has to be developed, the presence of the army is indispensable. The armed forces assist by facilitating contacts in the Youth-and-the-Army program, by training the draft, by upgrading personnel on the reserve list and by constantly keeping the public informed on its undertakings and achievements through its public relations service.

All these examples show to what extent the responsibilities of civil and military authorities overlap in civil defence: this interdependent action has also clearly appeared in other areas of civil defence. Thus one might be tempted to conclude that civil defence exists only as a function of military defence, that the latter is its natural support, and that, in a word, recourse to the army is now more than ever the key to civil power.

Obviously, this would be an exaggeration. The ordinance of 1959 stipulates in Article 17 that the Minister of the Interior "is to receive from the Minister of the Armed Forces, for the development and application of his resources, the support of the services and infrastructure of the armed forces", but the support on which the Minister may count on from the military is always of a complementary nature. He must first try to carry out his mission with his own by no means slender resources.

Nevertheless, civil authorities can develop and prepare their defence only in liaison and co-operation with the military authorities, just as the military authorities can establish and apply their plans only in agreement with the civil authorities. No civil defence without military defence, and no military defence without civil defence is the golden rule of the French defence system, a system that is dependent just as much on the co-operation of civil and military authorities as on the subordination of the military authorities to the government.

The French solution is somewhat different from that of other countries. Although the assistance of the armed forces in maintaining order is accepted in all countries, the defence structures adopted by some countries sometimes differ from ours: this is so in the Federal Republic of Germany, where "the support of the armed forces" constitutes oddly enough one of the missions of civil defence; the same applies in the United States, where the Director of Civil Defence is under the authority of the Secretary of State for the Army; and finally, in the USSR, where since 1960, civil defence has been placed under the jurisdiction of the Ministry of Defence, the Armed Forces being responsible for its organization and command.

The merit of our flexible and balanced system may well reside in the fact that it is based on the democratic principle that the main role of the Army is to serve the Nation. ▲

NEWS ARTICLE

Town Council Adopts Emergency Plan

PICTON, Ont. GAZETTE — December 13, 1972

Picton Town Council last Thursday accepted the peacetime plan drafted by the *Emergency Measures Organization,* which outlines the functions of key personnel in an emergency, plus procedure for execution of their duties.

As stated in the introduction of the draft, "Peacetime emergencies are defined as situations or the threat of impending situations abnormally affecting the lives and property of our society, which by their nature and magnitude require a controlled and co-ordinated response by a number of agencies, both governmental and private, under the direction of the appropriate elected officials, as distinct from routine operations carried out by an agency or agencies, e.g. fire fighting, police activities, normal hospital routine."

Aim of the Plan

The aim is to lay down a plan of action for the most efficient employment of all services required in order that the following may be assured: (a) The earliest possible response to an emergency by all services that may be required and the establishment of overall control of emergency operations. (b) Earliest possible control established to minimize crowd convergence, and to maintain order at the site so that emergency operations are not impeded, and that additional casualties are prevented. (c) Immediate action taken to eliminate all sources of potential danger in the area of the incident. (d) The evacuation of any building considered to be in a hazardous situation. (e) The rescuing of all persons trapped with minimum of delay and the provision of first aid at the site. (f) The provision of controlled evacuation and balanced distribution of casualties to hospitals. (g) The provision, where necessary, of such essential social services as may be required for persons affected by the incident and the emergency services personnel involved. (h) Factual official information is available at the earliest possible time to: all officials involved in emergency operations, the news media to allay public anxiety and to reduce the number of vices, Emergency Measures Co-or-individuals seeking personal information.

The Emergency Operations Control Group, comprised of the Mayor, town clerk, police chief, fire chief, town engineer, medical officer of Hastings and Prince Edward Counties Health Unit, director of the Prince Edward County Social Serous in themselves or to their occudinator, or their alternates will direct, all emergency operations. The Mayor, or alternate of he is absent or incapacitated, can on advice of other members of the group, for the purpose of the Plan, designate all or part of the town as an "emergency area".

In this area the following actions may be taken. Evacuation of buildings which are considered dangerous in themselves or to their occupants; dispersal of groups not involved in or hindering the operation, or in danger themselves; discontinuation of services; arrangements for the accommodation and maintainance on a temporary basis, of any residents in need of assistance due to displacement as a result of the emergency; the calling out and employment of any municipal equipment and personnel, including all equipment held by the EMO which is required in an emergency.

Implementation

This plan will be put into operation as soon as an emergency occurs or is expected, which is considered serious enough to put the wheels into motion.

The fire department, upon receiving word from the Control Group, is in charge of implementing the alarm system.

The municipal clerk will be responsible for overall co-ordination of operations, including collection and distribution of operational information for those concerned and for the preparation and release of information and instructions to the public.

Police services include crowd and traffic control, conducting of emergency vehicles in and out of the area; conduct building evacuations, protect against looting, advise the coroner in the event of fatal casualties; in the event of an airplane crash, notify Aircraft Craft investigating team; have an emergency alerting system for rapid assembly of all personnel and equipment.

Fire service includes implementing the emergency alerting system tending to fires; providing resucitation equipment and trained manpower when and where needed, and assisting public works with rescue operations, if necessary.

Special Arrangements

The supervisor of the Ambulance Dispatch Service (Belleville Control) is responsible for ensuing that sufficient ambulances are available.

Prince Edward County Memorial Hospital Disaster Plan will be implemented by the hospital authorities on learning that an emergency exists. Disaster plans of other hospitals in the area will go into effect on the request of the Medical Officer of Health to assist the local hospital in care of casualties.

In the event of death, police will notify the coroner, who will be responsible for fulfilling of the Coroners Act and advising the supervising coroner where deemed necessary.

If required, Bell Telephone will provide emergency service to Emergency Operation Control Headquarters; Municipal Officers; hospitals; Welfare Centre; first aid casualty collecting posts; police; fire and public utilities.

Also additional telephone lines will be required by the Emergency Headquarters.

County and Separate School Boards are responsible for controlling school populations, buildings, and facilities, as well as school buses in the emergency area. Schools may be required as Headquarters and, or Welfare Centres.

A member of Picton Town Council will serve as transportation Officer, and will be responsible for arrangements in this regard and for direction of transport operation. Emergency transport requirements will depend on the circumstances, but a basic requirement is two large trucks at headquarters and each Welfare Centre, to be provided by local transport firms. Also there will be additional vehicles to assist in ambulance service.

News Media

CJBQ Radio, Belleville will be used by Operation Control Headquarters to inform emergency personnel and the public of the situation and action to be taken.

CJBQ will, in an emergency, automatically request the public to keep out of the emergency area and to refrain from using the telephone unnecessarily and particularly not to call emergency services unless it is absolutely essential. The Registration and inquiry Section will provide the news media with factual information on the emergency on a continuing basis. It will also handle individual inquiries about people who are or who may be affected by the emergency.

In the area of communications E.M.O. radios will provide such between operations control, area and zone headquarters. Other radio systems will provide communications to emergency locations.

The Emergency Measures Co-ordinator makes plans in advance so that radio communications; auxiliary power; essential office supplies and equipment; system of gathering factual information for use of the O.E.C. Group; and an up to date inventory of supplies and equipment which might be required in an emergency will all be available. He will assist the Operations Co-ordinator.

As soon as possible and on a continuing basis, information will be provided by this person on the developing emergency situation in the municipality to Emergency Measures Branch and the Zone Planning Officer. This co-ordinator arranges for the provision of any equipment controlled by E.M.O. either locally or provincially, which may be required at the emergency site. This includes emergency power and lighting, communications and rescue equipment. He arranges for assistance from local organizations as necessary, such as radio operators and snowmobile clubs. The Plan provides legal authority for any additional measures that need to be taken to deal with the emergency.

Emergency Measures Organization Co-ordinator for this region, Angus Duffy, of Belleville, was present at the Town Council meeting when this Plan was accepted.

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